

**In the Claims**

1. (Currently Amended) A method for transmitting information in an optical communication system, comprising:

generating a plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal;

~~modulating a non-intensity characteristic of an optical carrier signal with a data signal to generate an optical information signal a wavelength division multiplexed;~~

multiplexing the plurality of optical information signals to generate a wavelength division multiplexed (WDM) signal, the WDM signal having a minimum channel spacing that is greater than  $(N+0.4)B$  and less than  $(N+0.6)B$ , where  $B$  comprises the symbol rate of the WDM signal and  $N$  is an integer;

~~transmitting the optical information~~ WDM signal over an optical link; and

~~amplifying the optical information~~ WDM signal over a length of the optical link with a plurality of co-launched amplification signal signals traveling in a same direction as the ~~optical information~~ WDM signal in the optical link.

2. (Currently Amended) The method of Claim 1, wherein the co-launched amplification signal travels at a substantially same speed as the ~~optical information~~ WDM signal.

3. (Currently Amended) The method of Claim 1, wherein the co-launched amplification signal comprises a wavelength lower than ~~that~~ those of the optical information ~~signal~~ signals.

4. (Currently Amended) The method of Claim 1, wherein the ~~optical information~~ WDM signal is amplified over the length of the optical link with the co-launched amplification signal by distributed Raman amplification (DRA).

5. (Canceled)

6. (Original) The method of Claim 1, wherein the phase of the optical carrier signal is modulated with the data signal.

7. (Original) The method of Claim 1, wherein the frequency of the optical carrier signal is modulated with the data signal.

8. (Currently Amended) The method of Claim 1, further amplifying the ~~optical information~~ WDM signal over a second length of the optical link with a counter-launched amplification signal traveling in an opposite direction as the ~~optical information~~ WDM signal and the co-launched amplification signal.

9. (Currently Amended) The method of Claim 1, wherein the ~~optical information~~ WDM signal and the co-launched amplification signal travel in the first direction, further comprising:

~~modulating the non-intensity characteristic of a second optical carrier signal with a second data signal to generate a second optical information signal;~~

generating a second plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal;

multiplexing the second plurality of optical information signals to generate a second wavelength division multiplexed (WDM) signal, the second WDM signal having a minimum channel spacing that is greater than  $(N+0.4)B$  and less than  $(N+0.6)B$ , where B comprises the symbol rate of the second WDM signal and N is an integer;

transmitting the second ~~optical information~~ WDM signal over the optical link in a second direction opposite the first direction; and

amplifying the first and second ~~optical information~~ WDM signals over the length of the optical link with the co-launched amplification signal and a counter-launched amplification signal traveling in the second direction.

10. (Currently Amended) The method of Claim 1, ~~further comprising:~~  
wherein generating a plurality of optical information signals further comprises  
remodulating the optical information ~~signal~~ signals with a transmission clock frequency  
using an intensity modulator to generate a multimodulated signal;  
~~transmitting the multimodulated signal over the optical link; and~~  
~~amplifying the multimodulated signal over the length of the optical link with the co-~~  
~~launched amplification signal traveling in the same direction as the multimodulated signal.~~

11. (Currently Amended) The method of Claim 1, further amplifying the WDM  
signal in the optical link with a discrete amplifier.

12. (Currently Amended) The method of Claim [1] 11, wherein the discrete  
~~amplifying~~ amplifier comprises an erbium-doped fiber amplifier (EDFA).

13. (Currently Amended) An optical communication system, comprising:  
an optical sender operable to ~~modulate a non-intensity characteristic of an optical carrier signal with a data signal to generate an optical information signal~~ generate a plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal, multiplex the plurality of optical information signals to generate a wavelength division multiplexed (WDM) signal and transmit the WDM signal over the optical link, the WDM signal having a minimum channel spacing that is greater than  $(N+0.4)B$  and less than  $(N+0.6)B$ , where  $B$  comprises the symbol rate of the WDM signal and  $N$  is an integer;

an optical link operable to transmit the ~~optical information~~ WDM signal; and  
a distributed amplifier comprising a pump laser operable to co-launch an amplification signal traveling in a same direction as the ~~optical information~~ WDM signal, the co-launch amplification signal operable to amplify the ~~optical information~~ WDM signal over a length of the optical link.

14. (Currently Amended) The optical communication system of Claim 13, wherein the co-launched amplification signal travels at a substantially same speed as the ~~optical information~~ WDM signal.

15. (Currently Amended) The optical communication system of Claim 13, wherein the co-launched amplification signal comprises a wavelength lower than that those of the optical information ~~signal~~ signals.

16. (Currently Amended) The optical communication system of Claim 13, wherein the ~~optical information~~ WDM signal is amplified over the length of the optical link with the co-launched amplification signal by distributed Raman amplification (DRA).

17. (Canceled)

18. (Original) The optical communication system of Claim 13, wherein the phase of the optical carrier signal is modulated with the data signal.

19. (Original) The optical communication system of Claim 13, wherein the frequency of the optical carrier signal is modulated with the data signal.

20. (Currently Amended) The optical communication system of Claim 13, the distributed amplifier comprising a second pump laser operable to counter-launch a second amplification signal in an opposite direction as the ~~optical information~~ WDM signal, the counter-launched amplification signal operable to amplify the ~~optical information~~ WDM signal over a second length of the optical link.

21. (Currently Amended) The optical communication system of Claim 13, further comprising:

a second optical sender operable to ~~modulate the non-intensity characteristic of a second optical carrier signal with a second data signal to generate a second optical information signal~~ generate a second plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal, multiplex the second plurality of optical information signals to generate a second wavelength division multiplexed (WDM) signal and transmit the second WDM signal over the optical link, the second WDM signal having a minimum channel spacing that is greater than  $(N+0.4)B$  and less than  $(N+0.6)B$ , where B comprises the symbol rate of the second WDM signal and N is an integer;;

the optical link operable to transmit the second ~~optical information~~ WDM signal in an opposite direction as the optical information signal; and

the distributed amplifier comprising a second pump laser operable to counter-launch a second amplification signal traveling in the opposite direction as the ~~optical information~~ WDM signal, the co-launched amplification signal and the counter-launched amplification signal operable to amplify the ~~optical information~~ WDM signal and the second ~~optical information~~ WDM signal over the length of the optical link.

22. (Currently Amended) The optical communication system of Claim 13, ~~further comprising:~~

~~wherein generating a plurality of optical information signals further comprises the optical sender operable to remodulate~~ remodulating the optical information signal signals with a transmission clock frequency using an intensity modulator to generate a multimodulated signal;

~~the optical link operable to transmit the multimodulated signal; and~~

~~the co-launched amplification signal operable to amplify the multimodulated signal over the length of the optical link.~~

23-26. (Canceled)